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ABSTRACT

Two studies, designed to investigate the development of trait oral communication apprehension among children, served as validation for a preliminary factor-based instrument called the Measure of Elementary Communication Apprehension (MECA). MECA was administered orally to young children and in written form to older adolescent students. Subjects were 595 upper-elementary school children in Lincoln, Nebraska, and 2,375 elementary, middle, and senior high school students in two county school districts in West Virginia. Two hypotheses relating apprehension to both sex of the subjects and their age were tested. Results indicated that (1) oral communication apprehension was found to exist from the first to the twelfth grade with consistent reliability of measurement and (2) MECA was positively related to the three existing trait measures of oral communication apprehension. Theory and research issues related to the development of oral communication apprehension in children are also discussed. (Author)

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MEASUREMENT OF COMMUNICATION APPREHENSION AMONG CHILDREN

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Abstract

Two studies, designed to investigate the development of trait oral communication apprehension among children, served as validation for a preliminary factor-based instrument, called the Measure of Elementary Communication Apprehension (MECA). MECA was administered orally to young children and in written form to older adolescent students. Subjects were 595 upper-elementary school children in Lincoln, Nebraska and 2,375 elementary, middle, and senior high school students in two county school districts in West Virginia. Two hypotheses relating apprehension to both sex of the subjects and their age were tested. Results indicated that (1) oral communication apprehension was found to exist from the first to the twelfth grade with consistent reliability of measurement, and (2) MECA was positively related to three existing trait measures of oral communication apprehension. Theory and research issues related to the development of oral communication apprehension in children are also discussed.

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MEASUREMENT OF COMMUNICATION APPREHENSION AMONG CHILDREN[1]

During the last decade, at least 10 studies a year have continued to generate knowledge claims toward a theory of oral communication apprehension (cf. McCroskey, 1970, 1975, 1976a, 1977). Despite the fact that communication apprehension, or more simply, CA, has been recognized and researched as a significant human communication construct, progress toward the further development of its theoretical underpinnings has been hampered by surprisingly little research in several areas. First, the distinction between state and trait apprehension has not been consistently accepted (cf. Lamb, 1972; Mischel, 1968; Spielberger, 1966; Spielberger & Lushene, 1970; Spielberger, Gorsuch, & Lushene, 1969). Second, the multidimensional nature of CA has not been fully isolated (cf. P. Andersen, J. Andersen, & J. Garrison, in press; Daly & Miller, 1975; McCroskey, 1970; Wheeless, 1975). Third, CA studies have generally failed to investigate subjects other than college students or adults (cf. McCroskey & Daly, 1976; Wheeless, 1971). McCroskey and Daly (1976) summarized this measurement issue when they wrote:

> Because of the current lack of availability of an adequate measure of communication apprehension that can be administered to children below the seventh-grade level, the exact extent of communication apprehension among school children has not been established (p. 68).

If it is possible to develop a reliable and valid measure of oral CA for children, it may then be possible to more completely and fully understand the causes of the apprehension trait. The objectives of this paper were to clearly identify, delimit, and reliably measure the oral CA construct among school children.

Communication Disorders of Children

Several biological factors central to the development of communication in children are helpful in explaining "communication disorders." Many of these disorders are isolated in the left cerebral hemisphere of the brain, and are frequently encountered by both speech therapists and classroom teachers. The left brain hemisphere governs verbal ability, as well as speech, reading, and writing (P. Andersen, J. Garrison, & J. Andersen, 1975; Galin & Ornstein, 1972; Milner, 1971; Moscovich, 1973; Smith, 1966; Sperry, 1967, 1968, 1973). A child's capacity for verbal communication, or more specifically language acquisition, is intimately related to the maturational history of the brain and to the unique degree of lateralization of brain functioning (Wood, 1976). The development of oral CA may also be related to lateralization of specific brain functions.

Estimates of the incidence of communication disorders range from five percent (Eisenson & Ogilvie, 1971) to somewhat over 10 percent of the young people currently enrolled in public elementary and secondary schools (Metz, 1973). These estimates include children who are blind, crippled, deaf, emotionally disturbed, hard of hearing, learning disabled, mentally retarded,

partially sighted, or speech impaired. Recent prevalence figures indicate that:

> We should assume modest overlap in the total listed in the literature, but we must still recognize that approximately 20,000,000 persons in this country have communicative handicaps worthy of our concern. Moreover, at least a third (about seven million) suffer either substantial or severe educational, social, and economic disadvantages. Finally, approximately one-fifth of the grand total (between four and five million) consist of persons under twenty one years of age (U. S. Department of Health, Education, & Welfare, 1976, p. 19).

Speech disorders. The consequences of disordered communication in later life are of a magnitude seldom realized. More children today are handicapped by disorders of speech and communication than by any other disabling condition (Johnson, Brown, Curtis, Edney, & Keaster, 1967; Lillywhite, Young, & Olmstead, 1970; Wood, 1976). One interesting aspect of the known prevalence figures is that the ratio of boys to girls suffering from oral communication disorders is about 2 or 3 to 1. Generally, this ratio holds for other left hemispheric brain disorders in many of the speech and writing areas (Lillywhite, et al., 1971).

Stuttering, a fairly common speech disorder, occurs "when the flow of speech is interrupted abnormally by repititions or prolongations of sounds, or by avoidance reactions" (Van Riper, 1963, p. 311). A stutterer fears many specific words, communicative situations, and selected listeners. Stutterers also develop general anxiety states and entertain feelings of guilt which are often expressed in hostile behaviors; these behaviors, in turn, can generate further feelings of guilt. Van Riper's (1963, 1973) developmental stages of stuttering identify several situational fears which trigger a lifetime of serious communicative disorders. The fourth stage of full-blown secondary stuttering occurs when fear is the covert, or internal, reaction and avoidance is the obvious behavior (cf. Andrews & Harris, 1964; Van Riper, 1973). Stuttering, then, can be considered as an anxiety reaction associated specifically with speaking situations (Eisenson & Ogilvie, 1971). From this definitional viewpoint, stuttering would seem to be strongly related to severe oral CA. Although help for stutterers and other speech handicapped students is available in the public school systems today, other communication disorders, perhaps related to or including CA, are not as easily recognized or actively treated.

Communication apprehension. As noted previously, the list of communication disorders that affect the behavior of children is extremely large. A debilitating handicap that is typically excluded from this list is CA. A child with trait oral communication apprehension is a child whose level of anxiety or fear is prompted from either real or anticipated situations involving talking with another person or persons. A highly apprehensive

individual anticipates negative feelings and outcomes from communication and will either avoid communication, if possible, or suffer from a variety of anxiety-ridden feelings while engaged in communication encounters. Withdrawal from communication situations is probably the most obvious socially maladaptive behavior associated with CA, but it is often confused with a number of other personality, psychological, and social abnormalities, especially in children. CA, then, may be the single most pervasive handicap confronting children in our schools (McCroskey, 1976a). Since a student's communication behavior may not always indicate apprehension, new measurement approaches designed to detect oral CA among children are clearly needed. In a review of both the elementary-level speech disorder and CA literature, Wheeless (1971) concluded that:

> Although most research on this problem has been done with college students, it is reasonable to assume that communication apprehension has its origins in the early years. The penalties, frustrations, anxieties, guilts, and hostilities which manifest themselves in speech disorders may well produce severe communication apprehension. Also, that various forms of communication apprehension contribute to speech disorders is relatively well established (p. 297).

While considerable time and research has been devoted to controlling the speech disorders of children, persons concerned with studying both communication process and disorders of communication have not extended this concern to CA, a phenomena which appears clearly detrimental to many educational and socialization processes.

Some research under the label of speech fright has provided preliminary indications of the general nature of oral CA in the elementary grades. One such effort (Shaw, 1966) developed a measure of speech fright which included introspective tests and observers' ratings; however, this approach required trained personnel and excessive time to conduct individual interviews. Another effort, using physiological measures to detect speech fright (Wheeless, 1967), found that Galvanic Skin Response (GSR) could be administered to elementary school children, but administration was time consuming, and the results were sufficiently more difficult to interpret than GSR measures of adults. Wheeeless (1971) has suggested that human communication researchers must devote more of their time and research outside university walls to CA; although this suggestion obviously has not been followed. The difficult issue of how best to measure oral CA among children is summarized in the following observations:

> No adequate paper and pencil test has been developed for elementary school children. However, the introspective test would tend to better isolate the child who unsatisfactorily internalizes and generalizes communication situations which are anxiety producing. It would appear, therefore, that the introspective

> method of screening would be the best means of isolation if tests could be developed, for example, that called for 'coloring pictures' rather than reading and writing (Wheeless, 1971, p. 298).

Thus, while it appears that children's apprehension levels can be measured, it is equally apparent that serious difficulties remain.

Research Questions

The problems associated with the measurement of CA among children generated a general research question: Is oral CA a viable construct among children? Three specific research questions were also formulated.

Q_{1A}: Can a self-report instrument reliably measure oral CA among children?

Q_{1B}: Are children's measures of oral CA factorially valid?

Q_{1C}: What is the relationship between known measures of oral CA and self-report measures of oral CA among children?

If the viability of self-report measures can be demonstrated, then it would be additionally important to determine the prevalence and distribution of oral CA across several diverse populations of children. Thus, a second research question was also advanced:

Q_2 : How is oral CA distributed among children?

RATIONALE AND HYPOTHESES

Sex of Subject

Research through the preschool years and into the early school years has consistently found girls to exceed boys in most aspects of verbal performance. Girls say their first word sooner, articulate more clearly and at an earlier age, use longer sentences, and are generally more fluent (Maccoby, 1966). The elementary-level speech disorder literature also indicates that boys have significantly more oral communication disorders than girls. However, from McCroskey's earliest CA research to the recent research of P. Andersen, et al. (in press), male college students have been observed to have significantly lower oral CA than female college students. Additionally, the physiological research reported by Porter (1974) confirms this finding, indicating that "females not only reported more fear but autonomic arousal was absolutely higher and increased at a faster rate than males" (p. 275). The current CA literature is inconsistent with the elementary-level speech disorder literature, and may not be generalizable to younger subjects. Further-

more, the brain sidedness literature suggests that the maturational history of the brain is also an important consideration. For these reasons, the following hypothesis was advanced:

H_1: Girls will have signficantly lower oral CA than will boys ($p < .05$).

Age of Subject

Researchers in several academic disciplines have consistently observed that older children communicate more effectively than younger children (cf. Flavell, Botkin, Fry, Wright, & Jarvis, 1968; Krauss & Glucksberg, 1969; Piaget, 1959). This developmental trend has been seen as a symptom of the decline in egocentricism as children grow older. However, the CA literature differs with that reported in other fields. Significant increases in speech fright were observed by Shaw (1966) in the upper-elementary grades. The incidence of speech fright, as measured by GSR, was also observed by Wheeless (1967) to increase significantly between the third and sixth grades. Wheeless concluded later, as a further link between elementary-level speech disorders and CA, that "although speech disorders decrease as the sample becomes older, the opposite appears to be true of communication apprehension" (1971, p. 298). Based on this rationale, and since recent research has not empirically tested the relationship between oral CA and the age or grade level of students, it was hypothesized that:

H_2: Oral CA is positively related to the age of children ($p < .05$).

METHOD AND PROCEDURES

Selection of Subjects

Research plans for two studies provided information for determining the minimum number of subjects necessary to detect small effect size differences with a statistical power ratio of .80 at alpha .05 (cf. Cohen, 1969; Kirk, 1968). Sampling procedures for these separate studies combined nonprobability and probability sampling techniques (cf. Babbie, 1973). General multistage cluster sampling was chosen for the second study, as the second research question prompted the selection of several diverse samples of subjects not easily listed in a single, global population.

Study 1. 595 fourth, fifth, and sixth graders were selected from the Lincoln, Nebraska public schools using stratification of grade, sex, and socio-economic background in systematic sampling procedures. The sampling ratio by elementary school was one-to-five.

Study 2. A nonprobability sample, utilized to select a wide variety of respondents, consisted of 2,375 elementary, middle, and senior high school students selected from the Pleasants and Wood County, West Virginia public schools.

Development of the Measure of Elementary Communication Apprehension

In order to measure oral CA among children, 20 Likert-type statements utilizing smiling and frowning faces were selected from an earlier version of the Measure of Elementary Communication Apprehension (MECA) instrument used by the authors in a pilot study (cf. J. Garrison & K. Garrison, 1975). Previous empirical research in communication and other fields has indicated that modifications can be made in existing measurement instruments designed for adults, making them applicable for children without seriously jeopordizing reliability and validity (cf. Castaneda, McCandless, & Palermo, 1956; Davidson & Sarason, 1961; Keller & Rowley, 1962; L'Abate, 1960; Loughlin, O'Connor, Powell, & Parsley, 1965; McCroskey, 1970; Sarason, Davidson, Lighthall, Waite, & Ruesbush, 1960). Moreover, other researchers have employed similar face questionnaires and have found them to be highly reliable with existing instruments (e.g., Dunham & Herman, 1975; Kunin, 1955). MECA was revised for these studies following McCroskey's (1970) guidelines for adapting his Personal Report of Communication Apprehension, College Form (PRCA; McCroskey & Wheeless, 1976) for use by middle and senior high school students. Table 1 reports the complete MECA instrument.

Insert Table 1 about here

Additional Measures of Oral Communication Apprehension

Three trait measures of oral CA were also administered to the subjects in study two. Table 2 presents the list of items used. The 10 item Oral Communication Apprehension Scale (OCAS; McCroskey, 1976b) attained an internal reliability ranging from .35 to .91. A 10 item short form of McCroskey's PRCA was also completed by the West Virginia students, and its reliability ranged from .53 to .88. The 10 item Verbal Activity Scale which measures self-perception of the amount of oral communication activity a person engages in (VAS; McCroskey, 1976b), was also included in the second study. Reliability coefficients ranged from .67 to .90 for the VAS. The grade level and sex of the respondent were ascertained using open-ended self-report questions.

Insert Table 2 about here

Statistical Analyses

Factor analysis data were submitted to principal components factor analysis, utilizing orthogonal and oblique rotations, in order to replicate the expected two-factor MECA solution (J. Garrison & K. Garrison, 1975). The extraction of valid factors utilized the 1.0 eigenvalue criteria

and the Scree procedure for determining the number of factors present. Individual scale items required primary factor loadings of .60 or greater, with no secondary loading higher than .40. An extracted factor was also required to have an internal reliability of at least .75 (cf. Nunnally, 1967, pp. 193-194).[2]

Factor analysis data were submitted to two statistical packages as independent checks on the factor structure (SAS-76, Barr, Goodnight, Sall, & Helwig, 1976; Biomed - P Series, Dixon, 1975). Kaiser's (1970) second generation LITTLE JIFFY program was computed for the most stable factor structure in each sample, in order to compute Kaiser and Hunka's (1973) Measure of Sampling Adequacy (MSA).[3] Since MSA has been empirically shown to mildly underfactor (cf. Cerny & Kaiser, 1977; Kaiser & Rice, 1974), an additional criteria of a .80 MSA, was adopted for determining how accurate each sample was for factor analysis.

Analysis of the Data

Research question 1A was answered by two independent tests of internal reliability.

Research question 1B was answered by principal components factor analysis, with both orthogonal and oblique rotations to simple structure.

Research question 1C was tested with Pearson product-moment correlations, determining the relationship of MECA to McCroskey's alternate measures of oral CA.

The second research question was answered by obtaining frequency distributions for MECA scores in both studies.

Hypothesis one, the relationship between elementary-level oral CA and sex of the subject, was tested utilizing a one-way analysis of variance.

Hypothesis two, the relationship between oral CA at the elementary level and the age/grade level of the subject, was tested utilizing one-way analysis of variance and trend analysis.

RESULTS

Study 1

Factor analysis of the 20-item MECA indicated the existence of two factors with eigenvalues greater than 1.0 (see Table 3). The Scree procedure and the factor loading criteria indicated that the two-factor solution was correct. Factor I contained seven items and was labeled "public." Factor II was labeled "interpersonal," and contained five items. All of the primary factor loadings, for the resulting twelve item MECA instrument exceeded .60.

Insert Table 3 about here

The seven item public factor had an estimated reliability coefficient of .78 using the split-half method and .79 using Nunnally's formula. Factor II, the five item interpersonal factor, had a split-half reliability of .76. Using Nunnally's formula the reliability was .77.

Hypothesis one, that elementary-level girls have significantly lower oral CA than boys was not confirmed in study one. The main effect for sex was not significant ($F = 1$, $df = 1,593$, $p > .05$). Girls ($\bar{X} = 54.38$, $N = 285$) did not have significantly lower oral CA than did boys ($\bar{X} = 54.41$, $N = 310$).

Hypothesis two, that a positive relationship exists between oral CA and age/grade level was tested by one-way analysis of variance and trend analysis. No significant effects for age/grade level existed across the fourth ($\bar{X} = 54.90$, $N = 215$), fifth ($\bar{X} = 54.11$, $N = 206$), and sixth graders ($\bar{X} = 54.15$, $N = 174$). The main effect for age/grade level was not significant ($F = 1.38$, $df = 2, 592$, $p > .05$).

Study 2

Factor analysis data from the larger sample of students in West Virginia also clearly indicated a two-factor MECA solution (see Table 3). Factor I contained the same seven items as the first factor extracted in study one; all items related to communication situations invoving public speaking. Factor II contained five items, related to interpersonal communication situations, identical to those loading on the second factor in study one. Primary factor loading exceed .60 for the same 12 item MECA instrument that met measurement criteria in study one.

Reliability estimates of the public factor were .78 using the split-half method and .80 using Nunnally's formula. The five item interpersonal factor attianed a split-half reliability of .76 and .78 using Nunnally's formula.

Cronbach (1949) has indicated that one measure of construct validity is factorial validity, the result of a factor analysis of all items purporting to represent a construct. This exact replication of MECA on two reasonably dissimilar populations offers support for the factorial validity of the instrument and the CA construct among children. Additionally, the eight measures of internal reliability computed using two different reliability coefficients, ranging from .76 to .80 across the two samples, indicated an acceptable level of internal consistency for MECA. Means, standard deviations, and reliabilities of MECA and McCroskey's alternate measures of oral CA are reported in Table 4.

Insert Table 4 about here

Results of Pearson product-moment correlations provided a precise test of the relationships among MECA and McCroskey's alternate measures of oral CA. Table 5 reports the intercorrelations among the four CA measures. The overall correlation across grade levels for MECA and OCAS was .65. Forty two percent common variance is reflected in the relationship between these two measures of oral CA. The correlation between MECA and PRCA, short form was .58. Only thirty four percent common variance was represented here. Finally, the correlation between MECA and VAS was .33. As might be expected in this test of discriminant validity, the measurement of self-perceptions of verbal activity is not as meaningfully related to MECA (shared variance = 11%), since MECA and VAS were not designed to measure similar constructs. Intercorrleations of all four measures, by grade level, are reported in Table 6. Table 7 also reports that apprehension scores span the entire MECA instrument and are approximately normally distributed.

Insert Tables 5, 6, and 7 about here

Hypothesis one was not confirmed in study one, but study two indicated a significant main effect for sex ($\underline{F} = 6.92$, $df = 1, 2289$, $p < .001$). Girls ($\bar{X} = 52.81$, $\underline{N} = 1143$) had significantly lower MECA scores than did boys ($\bar{X} = 54.05$, $\underline{N}$ 1148). However, by omega-squared (ω^2) estimate (Kirk, 1969), sex accounted for less than one-fourth of one percent of the variance in apprehension.

The second hypothesis relating apprehension and the age/grade level of the subjects also revealed a significant main effect ($\underline{F} = 19.32$, $\underline{df} = 11, 2345$, $p < .0001$). Variance in apprehension attributable to age was 8.3% ($\eta^2 = .0831$). Trend analysis yielded a linear component ($p < .0001$), with no significant departure from linearity ($p > .25$). Condition means appear in Table 4.

DISCUSSION

Interpretation of Results

The major research question posed in these two studies examined whether an adequate measure of oral CA could be developed for children. Based on the rationale that measurement of oral CA among children has previously met serious difficulties, a self-report measure was designed to meet this need. Two important criteria for evaluating a measurement instrument are, obviously, its reliability and validity. MECA was found to be highly and consistently internally reliable on different populations using different internal reliability estimates. Test-retest data over a two-week period, assessed in the Nebraska sample, indicated a reliability of .80. Reliabilities of the two MECA factors were also in the acceptable reliability range of .76 to .80. Additionally, total instrument reliability ranged from .71 in the first grade to .86 in the twelfth grade.

Validity of MECA was initially established in three ways. First, the instrument was determined to posess face validity by several communication researchers, and most of the items were constructed by modifying other known oral CA instruments. Second, MECA was determined to be factorially valid across two diverse populations, again establishing construct validity for the measurement of oral CA among children. Finally, MECA was shown to be highly related to three other measures of oral CA.

In addition, elementary-level girls were found to posess lower overall levels of oral CA, even in the early elementary years. Age was predicted and found to be significantly related to CA. As hypothesized, these findings supported the early childhood education literature and substantiates the knowledge claim that CA has its origin in the early years.

Limitations of the Present Research

A significant limitation of these studies was the reliance on a self-report measure of oral CA among children. While this approach appears to be more reliable and valid than previous measurement attempts, future studies should correlate the new self-report measures with unobtrusive (cf. Webb, Campbell, Schwartz, & Sechrest, 1966) and actual observed behavioral measures of apprehension. These procedures would substantially strengthen the predictive validity of the current version of MECA.

This study observed two distinct samples, but more diverse samples should be obtained in future investigations. Development of normative standards for future apprehension research will probably need from 1000 to 1500 students at every grade level. Attempts should also be made to gather data from preschool children as well. Longitudinal CA research would also serve to enhance the generalizability of the MECA instrument.

Etiology of Oral Communication Apprehension

While the causes of oral CA may never be completely understood, our discussion would not be complete if it did not include both environmental and hereditary influences in addition to the biological factors outlined initially. McCroskey and Wheeless (1976) have also suggested that the causes of CA are not fully known, but they specifically believe that it is produced in the individual by the conditioning aspects of the environment in which he or she grows and matures. They suggest:

> The best explanation for the existence of the communication apprehension syndrome is one of 'patterned conditioning.' It is thought that communication apprehension is developed from early chidhood by the process of reinforcement. If a child is not reinforced for communicating with his or her parents, peers, or teachers, it is likely that the child will develop communication apprehension (p. 88).

A preliminary study conducted by Randolph and McCroskey (1977) points to a significant relationship between family size and differential levels of oral CA in children. The findings of their study support the theory that as family size increases, the communication skills of the children in the family decrease, and the amount of positive reinforcement decreases correspondingly.

Although McCroskey and his associates have concentrated on the environmental causes of CA, the interaction conception is the most prevalent today in the field of developmental psychology (cf. Endler, Boulter, & Osser, 1976). According to this conception, all behavior is the product of interactions between hereditary and environmental factors. Some longitudinal and anterospective research has examined the nature of constitutional temperamental differences in children and their interaction with environmental influences in personality formation (cf. Chess, Thomas, & Birch, 1967; Thomas, Chess, & Birch, 1970). This research has been able to identify nine stable personality characteristics, measurable as early as birth or three months. These nine characteristics are: activity level, adaptability, approach-withdrawal, distractibility, intensity of reaction, persistence and attention span, quality of mood, rhythmicity, and sensory threshold.

A comparison of the nine characteristics of temperament observed by Thomas, et al. (1970) and the terms used by McCroskey, Daly, and Sorensen (1976) to describe high oral CA provides interesting results. High apprehensives have been described as: aloof, cautious, changeable, easily annoyed, quiet, reflective, reserved, restless, rigid, shy, silent, slow, stiff, strongly affected by emotions, tense, withdrawn, and as a worrier. Thus, it may be that many of the characteristics used to describe highly apprehensive people are also present at birth or shortly thereafter, and are not caused totally by the conditioning aspects of environmental factors. Moreover, Bell (1968) and Chess, et al. (1967) have suggested that parent-child interactions are bi-directional, as Chess, et al. explain:

> Parental attitudes and practices are usually selective and not global, with differential characterisitcs in different areas of the child's life and with marked variability from child to child. Parent-child interactions should be analyzed not only for parental influences on the child but just as much for the influence of the child's individual characteristics on the parent (1967, p. 321).

It may be difficult to determine whether it is the lack of parental encouragement and reinforcement which causes CA, or if temperamental characteristics of the child lead to fewer and less effective attempts to communicate, thereby precluding the possibility of a great deal of positive reinforcement. It is apparent that certain environments may be more likely to intensify the development of CA than others. Yet, we must not overlook the possibility of a predisposition towards oral CA in the personality constellations of some children.

Implications for the Public Schools

The availability of MECA to both teachers and administrators will enable them to assess the actual level of oral CA among their students. Even without the administration of MECA, teachers and parents can use the data from this study to minimize the level of oral CA among children. For example, situations involving communication performances that are evaluated by others appear to be the most apprehension producing. The MECA items with the highest mean apprehension level all require communicating in front of other people (see Table 1, Items 3, 9, 12, 13, 14, and 20). The lowest mean apprehension level included those items which emphasized group communication situations (see Table 1, Items 15 and 16). Based on these findings, it would appear that group communication situations are less apprehensive for most children. Teachers should consider such obvious tactics as alternate seating arrangements for the classroom (cf. McCroskey & Sheahan, 1976), assignments that do not require a high degree of oral participation from students who are highly apprehensive (cf. Burgoon, 1975), and strategies for teaching which lessen the overall apprehension level in the elementary school classroom.

Suggestions for Future Research

Three major areas are recommended for future research. First, there is a need to determine whether systematic desensitization (SD), a counter-conditioning technique using muscle relaxation and role simulation, is an appropriate therapy for overcoming the debilitating effects of oral CA among children. If CA is conditioned, then counter-conditioning should work to reduce it. Moreover, any behavior therapy that can be effectively used by parents, teachers, and other professionals to reduce apprehension in young children should also be investigated.

Second, MECA has additional potential as a diagnostic device for early childhood education specialists. If CA currently increases from grade to grade, as our data indicates, then research in early childhood environments should lead to a better understanding of the causes and development of oral CA among children.

Finally, while a theory of oral CA has been formulated, there is still a need for future research and tests of that theory which could probably benefit from the use of causal models. The results from these studies indicate that approximately 11% of the children suffer from the debilitating effects of oral CA. A series of cohort analysis studies might be designed to follow elementary school students through their educational careers, assessing their apprehension levels during each school year. Anterospective, longitudinal, and path analytic research programs of this type can not help but provide a more accurate understanding of oral CA among children, and numerous other human communication processes.

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FOOTNOTES

[1]Requests for reprints should be sent to Ms. Karen R. Garrison, Hayward School--TOP Program, 1223 North 9th, Lincoln, NE 68508. We are grateful to several people for their help in the conduct of this study: Diane Lockwood, George Merker, Larry Pate, Dan Sullivan, and Andy Wissmiller, University of Nebraska, for help in collecting the Nebraska data; Terry Workman and Paul Monkowski, Lincoln, Nebraska Public Schools; and the principals, students, and teachers of the Lincoln Public Schools.

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[2]Nunnally's formula ($\bar{r}_{kk} = k\bar{r}_{ij} / 1 + (n-1)\,\bar{r}_{ij}$) is computed by multiplying the number of items in a measure (k) by the average correlation among all the items, divided by 1 plus the number of items minus one, times the average correlation. Pearson product-moment correlations are transformed, via Fisher's Z_r procedure, before summing the averaging step, and the average Z_r score is then transformed to the equivalent Pearson product-moment correlation before use in Nunnally's reliability formula 6-18 (cf. Nunnally, 1967, pp. 193-194; and Garrison and Davis' computer program, 1977).

[3]Kaiser (1970, p. 405) reports that "MSA is a function of four 'main effects': (a) MSA improves as the number of variables increases. (b) MSA improves as the (effective) number of factors decreases. (c) MSA improves as the number of subjects increases. (d) MSA increases as the general level of correlation increases."

Table 1

Measure of Elementary Communication Apprehension (MECA)
(Items keyed to subsequent tables)

1. How do you feel when you talk to teachers or your principal?

*2. How do you feel about talking to someone you don't know very well?

*3. How do you feel when you hold something and talk about it?

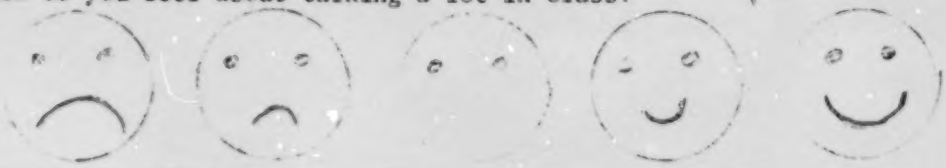
4. How do you feel about talking to people who aren't close friends?

5. How do you feel about talking when you have a new teacher?

*6. How do you feel about talking a lot when you are on a bus?

7. How do you feel when you are picked to be a leader of a group?

*8. How do you feel about talking a lot in class?



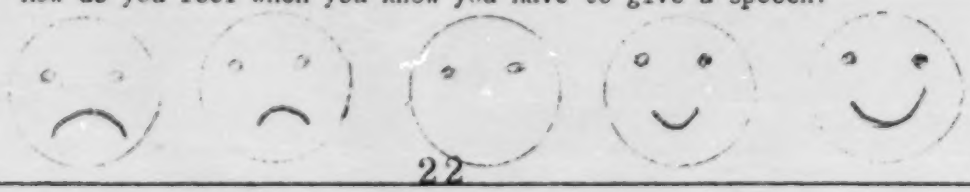
9. How do you feel when you talk in front of an audience?

10. How do you feel about talking to other people?

11. How do you feel about trying to meet someone new?

*12. How do you feel after you get up to talk in front of the class?

*13. How do you feel when you know you have to give a speech?



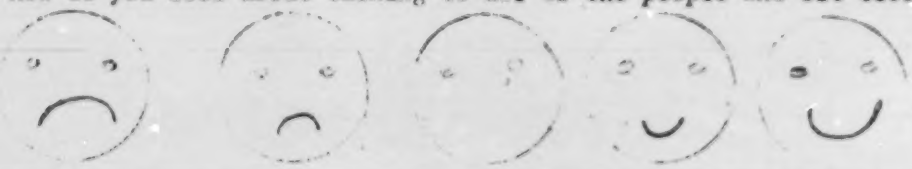
14. How would you feel about giving a speech on television?

15. How do you feel about talking when you are in a small group?

*16. How do you feel when you have to talk in a group?

*17. How do you feel when the teacher calls on you?

*18. How do you feel about talking to all of the people who sit close to you?



19. How do you feel when your teacher wants you to talk in class?

*20. How do you feel when you talk in front of a large group of people?

* Scores on these items must be reflected (6-X) before summing for total score.

Table 2

McCroskey's Alternate Measures of Communication Apprehension

The following 36 statements concern feelings about communicating with other people. Please indicate the degree to which each statement applies to you by circling your response. Mark "YES" if you strongly agree, "yes" if you agree, "?" if you are unsure, "no" if you disagree, or "NO" if you strongly disagree. There are no right or wrong answers. Work quickly; just record your first impression.

PRCA, Short Form

YES yes ? no NO 1. I look forward to expressing my opinions at meetings.
YES yes ? no NO 2. I am afraid to express myself in a group.
YES yes ? no NO 3. I look forward to an opportunity to speak in public.
YES yes ? no NO 4. Although I talk fluently with friends, I am at a loss for words on the platform.
YES yes ? no NO 5. I always avoid speaking in public if possible.
YES yes ? no NO 6. I feel that I am more fluent when talking to people than most other people are.
YES yes ? no NO 7. I like to get involved in group discussion.
YES yes ? no NO 8. I dislike to use my body and voice expressively.
YES yes ? no NO 9. I'm afraid to speak up in conversations.
YES yes ? no NO 10. I would enjoy presenting a speech on a local television show.

Oral Communication Apprehension Scale

YES yes ? no NO 11. Talking with someone new scares me.
YES yes ? no NO 12. I look forward to talking in class.
YES yes ? no NO 13. I don't like it when it is my turn to talk.
YES yes ? no NO 14. I like standing up and talking to a group of people.
YES yes ? no NO 15. I like to talk when the whole class listens.
YES yes ? no NO 16. Standing up to talk in front of other people scares me.
YES yes ? no NO 17. I like talking to teachers.
YES yes ? no NO 18. I am scared to talk to people.
YES yes ? no NO 19. I like it when it is my turn to talk in class.
YES yes ? no NO 20. I like to talk to new people.

Verbal Activity Scale

YES yes ? no NO 21. I enjoy talking.
YES yes ? no NO 22. Most of the time I would rather be quiet than talk.
YES yes ? no NO 23. Other people think I am very quiet.
YES yes ? no NO 24. I talk more than most people.
YES yes ? no NO 25. Talking to other people is one of the things I like best.
YES yes ? no NO 26. Most of the time I would rather talk than be quiet.
YES yes ? no NO 27. I don't talk much.
YES yes ? no NO 28. Other people think I talk a lot.
YES yes ? no NO 29. Most people talk more than I do.
YES yes ? no NO 30. I talk a lot.

Note. cf. McCroskey, 1976b.

Table 3

Factor Analysis of MECA Instrument

Factor	Study One (Nebraska)			Study Two (West Virginia)		
	I	II	h^2	I	II	h^2
MECA1	.35	-.23	.18	.38	-.18	.18
MECA2	-.16	.45	.23	-.13	.48	.25
MECA3	.10	-.33	.12	.12	-.30	.10
MECA4	-.44	.21	.24	-.42	.24	.23
MECA5	.15	-.31	.12	.18	-.27	.10
MECA6	.08	.60*	.37	.10	.62*	.40
MECA7	-.19	.69*	.51	-.15	.63*	.42
MECA8	-.60*	.14	.38	-.68*	.15	.48
MECA9	.42	-.27	.25	.44	-.25	.26
MECA10	.75*	-.08	.57	.75*	-.05	.57
MECA11	.10	-.63*	.41	.13	-.60*	.38
MECA12	-.74*	.00	.55	-.73*	.02	.53
MECA13	.17	-.63*	.43	.18	-.61*	.39
MECA14	-.66*	.18	.47	-.65*	.20	.46
MECA15	.65*	.00	.42	.65*	.01	.45
MECA16	.04	.62*	.39	.05	.63*	.40
MECA17	-.38	.48	.37	-.36	.49	.37
MECA18	-.74*	.13	.56	-.73*	.13	.55
MECA19	.23	-.51	.31	.25	-.49	.30
MECA20	.65*	-.22	.47	.66*	-.20	.48
Cumulative Percentage of Variance	.25	.34		.24	.34	
Eigenvalues	5.02	1.85		4.97	1.86	
MSA = .92				MSA = .95		
N = 595				N = 2,375		

Note. Items numbers keyed to Table 1.
Factor I is labeled public.
Factor II is labeled interpersonal.

*Items selected.

Table 4

Means, Standard Deviations, and Reliabilities of West Virginia Sample by Grade Level for MECA, PRCA, OCAS, and VAS

		INSTRUMENTS											
		MECA			10 Item PRCA			OCAS			VAS		
Grade	N	$\bar{X}$	SD	r	$\bar{X}$	SD	r	$\bar{X}$	SD	r	$\bar{X}$	SD	r
1	23	45.13	7.62	.71	24.78	4.21	.53	20.13	5.02	.35	32.83	7.75	.67
2	147	45.39	10.73	.76	27.76	6.34	.52	23.91	7.54	.76	30.89	8.32	.70
3	51	46.70	10.20	.82	29.94	6.96	.67	24.92	8.31	.73	30.08	8.70	.67
4	148	50.26	10.45	.74	28.35	8.15	.76	24.78	8.48	.84	31.91	8.61	.79
5	223	52.53	11.73	.82	28.28	7.54	.82	25.78	7.72	.80	33.99	9.42	.87
6	91	54.18	10.73	.80	27.24	6.36	.57	25.65	6.72	.75	34.45	8.88	.85
7	140	51.87	11.82	.83	28.54	9.81	.82	26.19	7.63	.84	34.28	9.25	.86
8	268	53.24	9.73	.75	28.57	6.74	.79	26.53	7.02	.84	34.29	8.64	.88
9	354	56.40	10.04	.80	29.10	10.04	.80	27.87	7.11	.83	33.27	7.76	.85
10	410	57.25	11.19	.84	29.72	11.18	.81	27.62	6.90	.84	32.84	8.61	.90
11	247	53.37	11.52	.83	28.05	7.68	.88	26.50	8.04	.91	34.97	8.62	.88
12	99	53.13	11.51	.86	27.58	7.26	.87	25.35	7.61	.88	34.93	8.07	.90

Table 5

Intercorrelations of Communication Apprehension Measures

	MECA	OCAS	PRCA	VAS
MECA	1.00			
OCAS	.65*	1.00		
PRCA	.58*	.71*	1.00	
VAS	.33*	.36*	.40*	1.00

* $p < .0001$

Note. MECA = Measure of Elementary Communication Apprehension
OCAS = Oral Communication Apprehension Scale
PRCA = Personal Report of Communication Apprehension, Short Form
VAS = Verbal Activity Scale

Table 6

Intercorrelations of Apprehension Measures by Grade Level in West Virginia Sample

	INSTRUMENTS					
Grade	MECA/OCAS	MECA/PRCA	MECA/VAS	OCAS/PRCA	OCAS/VAS	PRCA/VAS
1	.19	-.36	.24	.05	.00	.41
2	.48	.45	.13	.53	.20	.16
3	.22	.24	.29	.34	.16	.22
4	.66	.62	.29	.70	.37	.28
5	.64	.59	.27	.70	.28	.36
6	.65	.60	.28	.62	.27	.19
7	.66	.66	.43	.75	.35	.42
8	.67	.64	.42	.75	.41	.40
9	.70	.63	.40	.70	.39	.40
10	.66	.58	.47	.76	.51	.54
11	.70	.72	.53	.80	.57	.54
12	.75	.67	.47	.83	.49	.50

Table 7

Frequency Distribution for MECA Scores

	Study 1 (Nebraska) N = 595		Study 2 (West Virginia) N = 2375	
MECA Score	Frequency	%	Frequency	%
20-25	0	0	33	1
25-30	0	0	32	1
31-35	0	0	88	3
36-40	3	0	151	6
41-45	29	5	224	14
46-50	102	17	348	15
51-55	302	50	424	17
56-60	187	31	427	17
61-65	62	10	324	15
66-70	10	1	144	6
71-75	0	0	91	3
76-80	0	0	22	1
81-85	0	0	10	1
86-90	0	0	2	0
91-95	0	0	3	0
96-100	0	0	2	0
	$\overline{X}$ = 54.41		$\overline{X}$ = 53.31	
	SD = 5.44		SD = 11.33	